Lessons Learned, Before the Storm and After

Risk managers should anticipate risk events and respond to them. Risk events certainly are storms, but they can be pandemics, legislation, accidents, injuries, court rulings, and many other things that have a negative effect on the operations, people, and the mission of Fund members. The following compilation of risk events will examine some of the successes and failures of risk management. One consistent theme is that they keep happening no matter what we do. We can just hope that we can prevent some, keep some of them from getting worse and ultimately learn something that will help us in the future. That really is the first principle of risk management – learn something!

The following anecdotes and vignettes recount experiences Fund members have had before, during or after risk events. Risk events could be accidents, injuries, near misses, threats to the member's mission and "thank God we did what we did" moments.

So, what are some of the "storms" members have learned from and what have we learned? We will start with real weather storms since we are in the midst of another hurricane season. One of storms that taught a number of hard-earned lessons was Ike. Two members were hit particularly hard. One was on the east side of Galveston Bay, and one was north of Houston in Montgomery County.

The brand-new General Manager of the Galveston County Consolidated Drainage found himself on the second day of his job sitting in an auditorium with the Governor of Texas and numerous emergency management officials telling him what was approaching. Although there was little time to react, he and his staff did what they could to prepare for the storm. Flooding and storm damage were severe in the district's area and the important lesson was that the amount of flood water retention and transport out of the district was inadequate. Since the main purpose of the drainage district is to protect the people and businesses of the area, after the storm the district began to encourage and permit larger retention ponds as part of new development that could hold water and release it gradually over time.

The second initiative following Ike was to naturally channelize Clear Creek, the main conduit of flood water out of the Friendswood area to Galveston Bay. The primary goal was to improve storm flows without endangering the existing channel and environment along the creek. This involved making cuts in the bank where an ox bow curve, normally a feature that restricted rapid flow, could allow water to flow more directly and quickly downstream without being confined to the original channel. This shelving allowed a greater volume of water to move and not be backed up by the circuitous path of the original channel. In normal times water flowed in the original creek bed. Only during

periods of high flow did the water move through the shelved areas of the creek bank. The greater movement of water helped prevent backup and keep overflow out of the adjacent neighborhoods and businesses. The district has also built an additional 2,245-acre feet of off channel retention in the last three years.

Inks Dam, LCRA 2012

Ike was a Category 2 hurricane when it hit the Texas coast at Galveston Island. It had been up to a Category 4 storm and had a broad storm force wind field that carried a huge surge with it as it came ashore. The Risk Manager at the San Jacinto River Authority took numerous proactive measures to prepare the Authority for Ike. There were, however two surprises. One was that authority vehicles could not be refueled after the storm because gas stations all over Montgomery County did not have power. Filling fuel tanks before the storm would now be a checklist item in the future. One lesson learned.

The second surprise came from the winds of the storm as it moved inland. Ike's pattern of circulation brought high winds out of the north down the length of Lake Conroe building up waves of five to seven feet. The waves impacted the dam causing 1,500 feet of heavy rock rip rap to be stripped from the face of the dam. The rip rap did its job of protecting the dam, but a longer period of wave action could have begun to erode the structure of the dam. As Ike moved quickly north its winds shifted further diminishing wave impact. The rip rap was replaced with much larger rocks, not as easily moved by wave action.

Lake Conroe dam after Ike, scour of rip rap, SJRA 2008

The next big storm to impact Texas was Hurricane Harvey. It slammed into the Texas coast as a Category 4 storm near Rockport. Initially wind, storm surge, and flooding did damage but as the storm moved east it became a monster rainstorm that dropped 40 to 60 inches of rain in places.

Another contingency that coastal Districts have to face is to continue to provide water and sewer services to their customers after the storms passes. Another risk management measure came into play after Ike, Harvey, and the more recent Beryl. Emergency generators activated when power was lost allowed water supply and sewer services to continue. Coastal Water Authority took the power backup solution a giant step further. Their two large pump stations on the Trinity River feed water to millions of customers in Houston and surrounding areas. To prevent serious interruption caused by hurricanes and thunderstorms, the Authority brought power to each of the pump stations from two different power companies located in different geographical areas so it would be unlikely that both would suffer interruption of power at the same time. Coastal Water Authority also maintains back up generating capacity and limited battery backup for important control systems.

In the examples above, the risk is that the district or authority would not be able to deliver the vital services its customers needed. This risk seriously impacted the West Central Texas Water District that supplied water to over 200,000 residents of west central Texas.

When the Winter Storm of 2021 slammed Texas it disabled electrical utilities all over the state. The area around Abilene stayed below freezing for ten days resulting in rolling black-outs and curtailments of electricity to non-essential customers. Unfortunately, the district had not placed itself on the non-curtailment list, so power was cut off to a major pumping station resulting in disruption of water service to some customers. Realizing the error, the General Manager called utility officials to get the power turned back on. With reduced demand and water in district and city storage towers, a crisis was averted. The freeze also disabled cell service and the internet. The breakdown in cell phone service wiped out the primary means of communication across the district. Cell towers were disabled by the power outage and ice and snow accumulations. Only the District's mobile radios allowed communications in the field but not everyone in the field had one. The area also experienced heavy snowfall that impacted roads throughout the district's service area.

Lakeway, Texas, February 15, 2021

The cell service outage also disabled SCADA telemetry over the internet and shut down pump stations for extended periods. There was also other direct damage to a dozen air valves that had to be replaced.

As frozen pipes thawed all over the state water damage affected thousands of residential, business, and industrial customers. The Fund paid out millions of dollars to repair damage and drive home risk management lessons about what to do the next time Texas goes into a deep freeze.

A barge left high and dry by Ike storm surge. Houston Chronicle, 2008

What about other non-weather related risk events? Risk transfer is also a common tool. The coverages provided by the Fund are a way to transfer risk to someone else. In the Fund's case the transfer is to all members of the Fund who share in the losses of the self-insurance plan. The impact on members is mitigated by an effective transfer of risk to reinsurance companies and the buildup of surplus in the Fund to cushion large claims volumes. The risk of loss from automobile accidents, damage to buildings or equipment, injuries to employees or the public, and allegations of employee mistreatment are all transferred to the Fund.

Contractual risk transfer in indemnification and hold harmless clauses is another mechanism that Districts use. This requires the vendor or contractor to be responsible for claims that occur while they are providing services. Several years ago, vendors often prepared contracts as a "convenience" for the district. In some cases, they would not include an indemnification agreement so any damage or injury that might occur would be the district or authority's responsibility. Continued education about contracts and the development and use of standardized contracts containing language to protect the district or authority has almost eliminated the contract that only protects the contractor. Both the AIA and ECJDC contracts recognize the need for fair and reciprocal indemnification

where each party is responsible for their own sole negligence. The lesson learned about contracts is that if the district or authority is paying someone to do work for them then they can usually dictate the terms of the contract including indemnification and hold harmless agreements that favor the district or authority. The Fund's Risk Management Consultant can help you review any contract for optimal protection and risk transfer for the district or authority.

As mentioned in the first part of this article, one of the objectives of risk management is to learn about the sources of risk and how to deal with them. A useful tool in this process is the use of claim data. One of the truisms about data related to injuries to district or authority employees is that frequency leads to severity. For instance, in a list of 471 strain claims at one district, many of them will be minor but a few may be quite serious. An analysis of the claims of this district revealed that the average strain claim was $8,879 but the range was from a few hundred dollars to $1,184,498. Statistically, the more claims of a certain type, the more likely it is that some of them will be quite expensive (serious). All the claims tabulated were caused by the act of lifting some kind of object. This data tells the safety staff of this district that an emphasis on preventing lifting injuries could help achieve a reduction in the cost of workers' compensation claims of this type and possibly prevent serious and permanent disabling injuries that affect an employee for the rest of his or her life.

As part of the decision-making process regarding risk, districts or authorities use total cost of risk to help measure the effectiveness of risk management efforts. Cost of risk includes contributions paid to the Fund, deductibles, loss of use of vehicles or facilities due to claims and repairs, use of replacement facilities or services to continue operations, time cost dealing with risk events, and amounts spent to mitigate or avoid losses. One huge cost of risk occurs when there is a fatality of a district or authority employee. This is an extremely high cost for the knowledge gained about how to prevent future deaths. Nevertheless, Districts do learn from the event and make changes that can help prevent future events. Over the years the Fund's members have experienced fatalities that imposed both liability and workers' compensation costs.

Early in the Fund's history, claims were filed whenever there was a drowning in an irrigation district canal where swimming is prohibited. At first the Fund's policy was to settle the claim. This encouraged attorneys in the Rio Grande Valley to file claims every time there was a drowning. Finally, the members of the Fund urged rejection of these claims because of the Texas Tort Claims Act that limited a District's liability. Fairly soon, after legal expenses to fight the lawsuits resulted in several claim denials, claims for drowning were no longer filed. This is still the case today. As tragic as these events are, the Irrigation Districts are not responsible where canals are fenced, and signs warn against trespass and swimming.

Recent fatalities also illustrate the learning and changes that take place:

- In 2016, a tractor operator mowing a canal bank was attacked by a swarm of bees and died from the numerous stings. In response, the district enclosed the cabs of its tractors and installed air conditioning. Since then, other districts that conduct mowing

operations have followed suit. These measures improved the safety of tractor operators from bee attacks and the hazards of working in extremely hot and humid conditions.

- In 2020, A crane operator was killed when a pump being lifted fell on him. He suffered a severe crushing injury. After the accident investigation, the District responded by revamping its total approach to crane operations, rigging, and lifting practices. A new training and certification program was implemented requiring any operator of any lifting device at the district to have the training and certification, including annual renewals.
- Backhoes are common at most districts and can be dangerous if not operated with care. In 2015, a backhoe was being repaired in the field and when the repair was complete the engine was started. The control lever had been left engaged causing the boom to swing, crushing, and killing an employee who was standing between the boom and one of the outriggers. This violation of lock-out/tag-out protocol led to re-training of all staff. Although rare, a lock-out/tag-out violation can be fatal when machinery is activated while someone is in a killing zone.

One aspect of every claim the district or authority deals with is that something can be learned that may help prevent future claims. Member Safety Committees should be involved in root cause analysis of serious risk events such as the ones mentioned in this article. Consult the claim data that the district or authority receives monthly for trends and patterns that indicate where action can be taken. Effective risk management also requires that we learn from the successes and the failures to better protect customers, the public, employees, and the district or authority. Protective measures include re-training, revising policies and procedures, accident investigation, possible disciplinary action, leadership setting examples of safe work practices, and paying attention to safety. Fund Loss Control and Risk Management Consultants will help you analyze claim data to determine causes that may lead to effective prevention effort. Additional consulting support includes safety workshops, specific safety training, in depth risk management, security assessments for the district or authority, and on-site visits to assess district or authority procedures and facilities. Use the Fund’s resources to help improve the district or authority’s approach to prevention and learning from risk events.